Asymmetric division of *Drosophila* neural stem cells in development and tumorigenesis

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Neuroblasts (NBs) are the neural stem cells of the *Drosophila* central nervous system and they represent one of the best paradigms to analyze asymmetric cell division (ACD). ACD is a conserved mechanism to generate cell diversity during development and it is especially relevant during the development of the nervous system, when a great diversity of neural types must be formed. Furthermore, we more recently learned that compromised ACD can lead to tumor-like overgrowth. In the lab, we are interested in characterizing the process of ACD in detail and, as a result, we have identified some novel regulators and mechanisms that control this process. In addition, we recently demonstrated that the loss of some of these novel regulators of ACD (e.g., Canoe/Afadin) in NB clones, as well as that of other well-established ACD modulators (for example those encoded by the tumor suppressor genes *discs large 1*, *lethal (2) giant larvae* and *scribble*) does not lead to tumor-like overgrowth in the larval brain. Indeed, only the simultaneous loss of Canoe and Scribble in NB clones led to the formation of large tumor-like masses in the brain. The formation of these tumors is due to the upregulation of the Ras pathway, which is normally repressed by Canoe, a signal that in turn suppresses the apoptosis induced by the loss of *scribble* in NB double mutant clones. Based on these results, we have designed a screening to search for both novel ACD regulators and tumor suppressors. We are currently running a pilot screen as a proof of concept for our hypothesis before carrying out a high-throughput analysis, if that hypothesis proves to be correct. I will discuss the details of all this in the presentation.